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PIPE FIXING SYSTEM**Technical Field**

The present invention relates to a pipe fixing system, and  
5 more particularly, to a pipe fixing system, which can easily and  
rapidly fix and remove a pipe.

**Background Art**

In general, as examples of structures manufactured by  
10 connecting pipe type elements, there are street lights, sign  
boards, and notice boards installed along or on roads, water  
supply pipes, drain pipes, gas pipes, electric sign boards,  
advertising towers, and so on.

However, such pipe fixing system, which adopts a welding  
15 method or a screw structure, has a disadvantage in that it  
requires lots of time and manpower for fixing and removing the  
pipe structure.

In order to connect a pipe type structure, an end of the  
pipe type structure is welded to the steel board while being in  
20 close contact with the steel board, the triangular iron  
fragments are welded onto the steel board and the pipe while  
being in close contact with the steel board and the pipe, and  
then, the steel board and the iron fragments connected to the  
pipe are coupled with each other by means of bolts.

25 A pipe joint for connecting the pipes has lots of welded or

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screwed connections. If large-scaled pipes are connected, a rubber ring is covered on a pipe connection portion, and a round metallic material is covered thereon, and fixed by means of bolts.

5        Such fixing method has several problems in that it requires lots of time and manpower to install the pipe structure and it is complicated as workers must work in reverse order to disassemble it.

10       Therefore, installation, repair and maintenance, and dismantlement of a sign board or a street light on the road require an improved fixing method or system, which allows for rapid work. Moreover, also in installation and maintenance of large-scaled waterworks or gas pipes, people demand a rapidly and securely fixing system.

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### Disclosure of Invention

Accordingly, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a pipe fixing system, which can easily fix or connect  
20 and remove a pipe structure without welding or other auxiliary work.

Another object of the present invention is to provide a pipe fixing system, which is economical in installation and maintenance as rapidly fix and remove the pipe structure.

25       A further object of the present invention is to provide a

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more firm pipe fixing system and a pipe structure connecting system.

### Brief Description of Drawings

5 Further objects and advantages of the invention can be more fully understood from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a sectional view of a pipe fixing system according to a preferred embodiment of the present invention;

10 FIG. 2 is a view, seen from an inlet side, showing a pipe connection state;

FIG. 3 is an exemplary view of a fixing chip of the present invention;

15 FIG. 4 is a sectional view of a pipe structure fixing system using the present invention;

FIG. 5 is an exemplary view of a pipe structure connecting system manufactured by uniting two pipe fixing systems of the present invention; and

20 FIG. 6 is a pipe joint using the present invention.

### Best Mode for Carrying Out the Invention

The present invention will now be described in detail in connection with preferred embodiments with reference to the accompanying drawings.

25 A pipe fixing system according to the present invention is

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a base part of a pipe structure, and is to insert and fix pipes therein.

A body 20 includes ~~a stopping part 21 formed on the lower~~ portion of the inside thereof for stopping movement of the pipe  
5 10 inserted into the body 20, ~~an extended portion extending from~~ the stopping part 21 to a predetermined portion of the body 20 for closely contacting and fixing the pipe 10, a tapered part 22 having an inner hollow portion and an inclined surface gradually narrowed toward an inlet 23, and the inlet 23 formed in such a  
10 manner to be bent at an end of the tapered part 22 in a "┐" form for inserting the pipe 10 therein.

The inner hollow portion of the tapered part 22 has a number of fixing chips 24 mounted therein, and each fixing chip 24 has a wide lower portion and a narrow upper portion. The  
15 upper portion of the fixing chip 24 is connected to a bolt 25 inserted into the inlet 23 from the outside. When the bolt 25 is tightened, the fixing chips 24 are lifted up along the bolt 25, inserted between the inclined surface of the tapered part 22 of the body 20 and the pipe 10, thereby serving a wedge action. The  
20 pipe 10 can be securely fixed by the wedge action.

The fixing chip 24 has a bolt hole 26 formed in the inlet side for inserting the bolt therein. Therefore, after the pipe 10 is inserted into the body 10, when a worker tightens the bolt, the fixing chip 24 is pulled upwardly and fixed between the

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tapered part 22 of the body 20 and the pipe 10, and serves the wedge action.

If the pipe fixing work is finished by tightening the bolt 25, the extended portion extending from the upper portion of the stopping part 21 and the fixing chips 24 hold and fix the pipe 10, so that the pipe can be secured. Particularly, the wedge action of the fixing chips 24 can tighten the pipe 10 with strong power to fix the pipe 10.

To remove the pipe 10 from the pipe fixing system of the present invention, when the bolt 25 is loosened, the fixing chips 24 are lowered downwardly along the tapered surface of the tapered part 24 to the wide portion, and thereby, the pipe 10 can be released from the wedge action of the fixing chips 24 and easily removed from the fixing device.

The present invention can provide very secure effects for fixing and connecting large-scaled pipes as using the bolt for maximizing the wedge effect.

It is preferable that three fixing chips 24 are used to provide a stable structure, and two bolts are mounted to prevent instability, which may be generated during tightening the bolts, due to a laterally long shape of the device. It would be appreciated that a spring is mounted under the fixing chips against possible bolt release so as to provide stability.

The surface hardness of the fixing chip must be higher than that of the body or the pipe to maximize the function of the

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fixing chip. It is preferable that the extended portion, which is in close contact with the pipe, has a saw-toothed shape to maximize friction force, so that the pipe is not moved in the opposite direction of the insertion direction.

5 Furthermore, the pipe 10 can be fixed more securely if the bolt 25 reaches to a start portion of the tapered part 22.

If the bolt hole 26 of the fixing chip 24 is formed ellaptically in the central direction of the inlet 23, when the fixing chips 24 are moved in the central direction of the body 10 20, it can reduce stress generated between the bolt 25 and the bolt hole 26.

A horizontal fixing plate 27 is mounted on the lower portion of the fixing device, and the fixing plate 27 has a number of vertical holes for inserting bolts. The pipe fixing 15 system is installed on concrete, which is buried under the ground, by inserting and fastening the bolts into the vertical holes of the fixing plate 27.

The present invention can be used as a firm I-shaped, L-shaped, or T-shaped connecting device for the pipe structures by 20 facing and connecting base portions of at least the two pipe fixing systems.

In addition, a large-sealed pipe joint can be manufactured in such a manner that two pipe fixing systems of the present invention are united into one piece and a packing 28, such as a 25 rubber ring, is mounted under the tapered part 22. In the pipe

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joint, the packing 28 provides an air-tight action, and the united pipe fixing systems ~~according to the present invention~~ prevent movement of the pipe 10.

## 5 Industrial Applicability

As described above, the pipe fixing system ~~according to the present invention~~ can easily fix and remove the pipe by a simple screwing action.

10 The pipe is fixed ~~in forward and backward directions of the~~ inserted direction, and when the worker fastens the bolt tightly, the fixing chips can ~~tighten the pipe firmly by the wedge action,~~ so that displacement of the pipe due to rotation of the pipe can be prevented, ~~thereby improving stability of the fixing device.~~

15 Furthermore, since the present invention can easily and stably fix and ~~remove the pipe,~~ it can be ~~widely used~~ for permanent fixing and temporary fixing of the pipe.

Moreover, the present invention can easily and rapidly fix the pipe at a small space as not using a welding method.

20 While the present invention has been described with reference to the particular illustrative embodiments, it is not to be restricted by the ~~embodiments~~ but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the ~~embodiments~~ without departing from the scope and spirit of the ~~present invention.~~